

Product Performance Data Evaluation Review

By

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EPA Reg. No. 279-3206

Product Name: Talstar TC Flowable Termiticide/Insecticide

Active ingredients: 7.9% bifenthrin

Formulation: insecticide concentrate

Request: Review the submitted efficacy data in support of proposed label claims to kill/control bedbugs.

Application rates: For bedbugs – 0.02% to 0.06%. For indoor use there is no rate/1000 square feet stated. Can be applied once every 7 days. Application is crack and crevice and spot treatment.

Use pattern/sites: product is for use on outdoor areas as directed by the label. Can also be used in food handling establishments and indoor residential areas. Bed bug uses are indoor only.

OPPTS Guidelines: 810.3500

Study GLP?: This is a GLP study.

Submitted study:

MRID 47020401 Efficacy of TalstarOne for control of Bed Bugs by Thomas Anderson, FMC Corporation

Purpose: To test the contact and residual efficacy of TalstarOne against bed bugs.

Methods: The product was tested on three different substrates: cotton cloth, unpainted wood and painted wood. Water served as the negative control while Tempo SC was a

treatment included for the purpose of comparing the TalstarOne product to a commercial standard. Blood-fed bed bugs were tested in the study.

Direct contact sprays were performed in Petri dishes. Each treatment consisted of four treated replicates and one control replicate. Each replicate consisted of 10 bed bugs. Direct applications were made to the bed bugs in the (9cm?) Petri dishes. Two different bifenthrin dilutions were prepared and applied as treatments containing 300 pm (0.03%) and 600 ppm (0.06%) bifenthrin, respectively. The Tempo SC formulation was diluted to make 0.25% and 0.05% beta-cyfluthrin solutions. FMC did not report the application volume or rate made to each replicate. On page 12 the report states: "The volume of treatment to be applied was previously calibrated to ensure coverage to incipient runoff." There is no mention of the amount of a.i. expressed in terms of mg bifenthrin/cm². These omissions must be corrected and should have been reported as part of the GLP QA procedure. The size of the Petri dishes is also not reported.

Residual treatments. The subject test substances were used to treat unpainted and painted wood panels and pieces of cotton cloth. The paint used is not reported. The type, size and weight of the cotton cloth pieces are also not reported. Bed bugs were exposed to the treated surfaces under a 9cm Petri dish for 24, 48 and 72 hours at days 0, 14, and 28 after the treatment. Mortality was reported and corrected with Abbott's Formula as required.

Test Results:

The results are reported in Tables 8.1 through 8.10 of the study and are summarized below:

Direct Sprays. The Direct Spray treatments resulted in 100% kill at 24 hours.

Residual Testing: Bifenthrin worked slowly and 72 hours were required to kill the bed bugs.

Cotton: The residual treatments to cotton cloth pieces provided up to 4 weeks control.

Unpainted Wood Panels: The residual treatments provided up to 4 weeks control.

Painted Wood Panels: The residual treatments were unacceptable with only about 40% control.

Conclusion: The product "kills" bed bugs following direct treatment at the 0.03% bifenthrin dilution or greater. The product provides up to four weeks residual control at dilutions of 0.03% or greater when applied to unpainted surfaces and cloth. The product performs poorly, if at all, against bed bugs on painted surfaces.

Entomologist's Recommendations:

1. Submit the following data to upgrade the study to "acceptable": 1) the volume of product applied to each panel; 2) the treatment expressed in terms of mg bifenthrin/cm²; and 3) the size of the test panels and swatches of cotton;

2. Label comments.

a. On page 4, the formula for calculation percent active ingredient in an end use solution is difficult to interpret as written. It is not clear that it is a fraction. I recommend a clearly defined line between the numerator and denominator be added:

$$\% \text{ a.i.} = \frac{(7.9) (\text{Fl. oz. Talstar TC added to tank})}{(\text{gallons of finished spray mix}) \times 128}$$

b. State the application rate for bed bug control per 1000 square feet. The label states that for ant control indoors the product is to be applied at the rate of 1 gallon per 1000 square feet. The label also provides application rates and dilutions in the table on page 3 that should be referenced throughout the pest control sections. The application rate of a.i. should be consistent and supported by the submitted efficacy data.

c. Remove the 0.02% dilution for bed bug control applications from the label. The bed bug data set submitted supports the application of dilutions from 0.03% to 0.06% bifenthrin to unpainted surfaces and cloth. In order to compensate for poor performance on painted or possibly non-porous surfaces, I recommend using a only the 0.06% dilution for bed bug control since painted and unpainted surfaces may be present at any site infested with bed bugs. Cloth is unlikely to be treated according to the label and carpet was not tested. The 0.06% dilution is approved for indoor use against a variety of pests.